News

Western Center for Agricultural Health and Safety

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National train-the-trainer pilot program modeled after UC program

Since 1995, the UC IPM Pesticide Safety Education Program has conducted more than 200 train-the-trainer workshops throughout California. Its staff members have trained more than 4,600 instructors, who, in turn, are responsible for training more than 870,000 workers in California. The UC IPM Worker Protection Safety instructor manual and other related materials are serving as models for train-the-trainer programs throughout the United States.

The national pilot program effort began in 2000, when the United States EPA began a national assessment of the Worker Protection Standard (WPS) by convening public meetings in Sacramento, Austin, Texas, and Orlando, Fla. UC IPM Pesticide Safety Education Program staff members attended all three meetings and actively participated in sessions dealing with training. The following year, three subcommittees were formed, one of which was to develop a pilot train-the trainer program to be tested in several states.

Pat O'Connor-Marer, pesticide safety training coordinator with UC IPM and outreach coordinator for the Western Center for Agricultural Health & Safety (WCAHS), played a key role in this 17-member subcommittee.

(*see* **Training** *on page 2*)

Photo courtesy of UC IPM Pesticide Safety Education Program.

Center awards ag research funding to five grad students

The Western Center for Agricultural Health & Safety recently awarded $45,000 in research funding to five UC Davis graduate students, who were identified by principal investigators as engaging in work related to the Center's mission to protect and improve the health and safety of the nation's farmers, farm workers and consumers. Here are synopses of the students' research projects.

Pesticide Safety Education and Standardizing Cholinesterase Monitoring for Agricultural Workers in Washington

Daniel E. Arrieta

A recent court decision has mandated the state of Washington to implement a statewide cholinesterase (ChE) monitoring program. Because of their involvement in a program in California to standardize ChE measurements by clinical laboratories, Daniel Arrieta and his major professor Barry Wilson have been asked to assist with the implementation of a similar program in

(*see* **Funding** *on page 5*)

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The subcommittee selected the states of Washington, New Jersey and Florida as locations for pilot train-the-trainer programs. Specific goals in developing the pilot programs include improving the quality of trainers and training, creating a national pool of competent trainers, ensuring national consistency in training and devising a way to evaluate trainer competency.

The committee selected 10 people to be master trainers for this pilot, representing the most experienced and qualified WPS trainers in the United States, based on experience and peer recommendations. Tim Stock, who joined the UC IPM program last August, was among those selected.

"Most of the trainers were recruited from the states in which the pilot programs are taking place," said O'Connor-Marer. "Tim formerly worked for the Washington State Department of Agriculture, so he applied and was selected to spend a couple of weeks doing the training there."

O'Connor-Marer and pesticide safety educator Jennifer Weber developed the curriculum for the master trainer orientation and for the state pilot train-the-trainer programs. In March, O'Connor-Marer met with state and federal

Tim Stock joined the UC IPM program last August.

representatives in Arlington, Va., to review and refine the curricula. In early April, he and Weber met with the master trainers, state representatives and federal EPA representatives in Arlington and conducted training over a two-day period. They were given special recognition awards for their efforts by the EPA's Office of Pesticide Programs.

State pilot workshops are scheduled to take place in May and June. Each state is recruiting 40 participants from local communities to participate in the pilot workshops, which will be offered in Spanish and English, in either of two formats. The first format encompasses seven hours of relevant background information and instruction in techniques to conduct training. The second format involves an additional four hours of training practice. The subcommittee contracted with Washington State University to develop evaluation instruments to assess the two formats and the effectiveness of the pilot project in training agricultural field workers.

Following his Washington training, Tim Stock will work with O'Connor Marer on the California Minor Crops Council's program to identify pest management hazards in specialty crops in California, and to develop train-the-trainer programs for specialty crop growers. The program, funded through the Department of Food and Agriculture, is part of the "Buy California" campaign, a partnership between government and industry to promote California-grown agricultural products to California consumers, benefiting both public health and the state's economy.

For more information, please contact Patrick O'Conner-Marer at pjmarer@ucdavis.edu, or call (530) 752-7694.

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Challenges in Agricultural Health & Safety

Sept. 7–9, Crowne Plaza Union Square, San Francisco, California

A conference for physicians, physician assistants, nurses, other health care providers, veterinarians, university researchers, Extension and other educators, federal, state and local government agency staff, agribusiness representatives, rural residents, and all who are interested in agricultural health and safety. A great way to get continuing education credit. Co-hosted by the Western Center for Agricultural Health & Safety (at UC Davis) and the Pacific Northwest Agricultural Safety & Health Center. For more information, please visit the Web, http://agcenter.ucdavis.edu and select the link "News & Events."

First African-American Farm Safety Study conducted in the Deep South

In recent years, many farmers in the Deep South have replaced part of their fields with large catfish ponds—either to supplement their other crops or to completely replace them. Some surprising injury patterns have emerged as a result of this "aquaculture farming." During a CDC-funded Farm Safety Study involving nine rural counties in Alabama and Mississippi, investigators at the University of Alabama have discovered increased incidents of drownings (or near drownings), since much of the harvesting of aquaculture farming takes place while the workers are in the water. Although aquaculture farming was not the focus of the CDC-funded study, the findings may warrant further investigation. Other injuries involved electrocutions, tractor rollovers, snake bites and a few foot injuries resulting from stepping on dead catfish.

In February, the Western Center for Agricultural Health and Safety hosted as its noon seminar speaker Gerald McGwin Jr., M.S., Ph.D., a professor in the Department of Epidemiology at the University of Alabama, Birmingham, and key investigator in the study. He presented a talk titled "The Farm Safety Study: A Longitudinal Study of Agricultural Injury Among Farmers in the Deep South."

"These are very rural parts of the states, and very poor. The majority of the farming done in those areas is cotton, soybeans and livestock, but many of the row-crop farmers are converting their farms to catfish farms, and other types of fish," said McGwin.

"Most of what we know from the literature comes from the Caucasian population. This is not surprising because much of the research has been done in the Midwest, a predominantly white population of farmers," he added.

McGwin's final study cohort of approximately 1,300 farmers was derived from interactions between extension agents, church groups and community groups to locate farm workers and encourage them to enroll in the study. "We made visits to these communities, held dinners in church halls, and invited farm workers to come and participate in the study," said McGwin.

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—Gerald McGwin

The data collection involved a baseline questionnaire that focused on demographic farming and behavioral information. Some of McGwin's primary areas of interest were knowledge of farm safety, as well as equipment and equipment quality, and farm owners' attitudes and behaviors with respect to farm safety training programs for their employees.

Each January and July during the three-year study, investigators re-contacted farmers (by either telephone or by mail) for the assessment of the occurrence of injury. "Many of the farm workers didn't have phones, so we had to utilize a lot of contacts in the community to keep track of them," said McGwin.

Participants were asked if they had an injury they would define as "an unintentional physical injury or poisoning that occurred during an agricultural activity that required attention or resulted in at least one-half day of restricted activity."

McGwin's final analysis included 685 Caucasian owners, 321 African-American owners, and 240 African-American farm workers. Investigators found African-American workers tended to be younger, with more than half under 40 years of age. The age distribution of the owners—Caucasian or African-American—was similar, and most were older than the workers.

The educational backgrounds of the two groups differed. Caucasian owners tended to be more educated than both the

(*see* **Deep South** *on page 4*)

Latinos face major health hazards in U.S.

Smoking addiction, weight gain, and sexually transmitted diseases are three major health hazards Latino immigrants confront when coming in contact with the American culture, according to a new study at the University of California, Davis.

"Immigrant health is a major problem today and will be for the foreseeable future," says Marc Schenker, professor of epidemiology and preventive medicine and director of the UC Davis Western Center for Agricultural Health and Safety.

Schenker's study found that Latin Americans' health status deteriorates when they migrate to the United States. Weight gain becomes a big health risk when immigrants encounter cheap, low-quality food and develop bad eating habits. They stop eating fresh foods and homemade meals, increase their consumption of foods with fat and sugar, and give in to the "super-size" portions. Also, Latino eating habits change simply because they are able to afford this new lifestyle, Schenker says.

Secondly, the longer immigrants, including pregnant women, reside in the United States, the more likely they are to smoke. Again, having the monetary resources to sustain this addiction encourages smoking, Schenker points out.

Finally, statistics are showing increasing numbers of Latinos contracting sexually transmitted diseases, the result of losing conservative moral attitudes as immigrants adapt to the sexually freer American culture, Schenker says.

According to Schenker, identifying problems and educating Latinos are important first steps. Further, addressing the problem in its early stages, before the onset of the chronic diseases, is equally important.

"It is easier and more cost-effective to prevent the consequences of obesity from occurring than to have to treat them once they have developed the problem," says Schenker.

For more information, Dr. Marc Schenker can be reached by e-mail at mbschenker@ucdavis.edu.

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(Deep South *from page 3*)

African-American owners and workers, with half of the African-American workers having less than a high school education.

"When looking at risk factors, this is important, but it's also important when considering some of our educational intervention," said McGwin. "We had a very big challenge in taking some of our findings back to the community, because we had to keep in mind the differences in educational backgrounds of the individuals."

The study revealed the most frequently reported injuries in all groups involved upper extremities—mostly fingers and hands. The majority of injuries were either cuts, lacerations, broken bones or contusions, and most of the injuries occurred during equipment repair. A number of lower extremities and trunk injuries resulted from falling off a piece of equipment or being struck, kicked or run over by an animal. Many face, head and neck injuries resulted from falls and from pesticide exposures (e.g., eye injuries).

"African-American workers who missed work often reported that being injured was a significant problem for them, not only physically, but financially, personally and socially. Much more so than the other groups," said McGwin. "Many of these individuals were hurt to the point that they couldn't work for several days and would end up losing their job."

In conjunction with the Department of Health Behavior in the School of Public Health, McGwin and his colleagues developed educational messages to help the extension agents who work with the farmers to interpret risk of injury for them.

"It was the farmers and extension agents who made this study happen, and we closed the loop in the community by delivering back to them what we found with their help," said McGwin.

For more information, Gerald McGwin may be reached by e-mail at Gerald.McGwin@ccc.uab.edu.

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(**Funding** *from page 1*)

Washington. Arrieta's specific aims include:

- Assisting the state of Washington in setting up a cholinesterase monitoring program by providing a bovine red blood cell ghost standard developed by researchers in Wilson's laboratory;
- Conducting an outreach forum for public health personnel, clinical laboratories, and farm workers to explain the importance of ChE monitoring for pesticide handlers and mixer/loaders.

Farm Work and the Epidemiological Paradox of Low Birth Weight Delivery Among Latina Women

Jeffrey Bethel

Studies have shown that the birth weight of babies born to Latina women raised in the United States is often lower than the birth weight of infants of foreign-born Latina women. Even more disturbing is the observation that Latina immigrant women experience worsening birth outcomes the longer they live in the United States, despite increasing access to prenatal care, improved socioeconomic status and better education. Graduate student investigator Jeffrey Bethel hypothesizes that job stress and occupational exposures related to farm work best explain the worsening pregnancy outcomes among immigrant Latina women. The overall goal of Bethel's research is to identify Latina women at risk for adverse pregnancy outcome among U.S.-born and foreign-born Latina women residing in California between 1980 and 2001. Using birth certificate data, Bethel will examine the temporal pattern of rates of low birth weight (LBW) deliveries and maternal demographic and occupational risk factors for LBW deliveries for foreign-born and U.S.-born Latina women over a 20-year period. He will analyze the association between maternal occupation, maternal birthplace and low birth weight deliveries in California.

Design of a Commercialized Winegrape Harvest Intervention

Andrew J. Holtz

Within certain regions of California, winegrapes are harvested by hand. The task of hand-harvesting winegrapes poses ergonomic risks in the form of musculoskeletal disorders (MSDs). Most MSDs that are reported in this occupation occur in the lower back, and the activities that create the disorder include lifting, carrying and dumping containers full of cut grapes from the grapevine to the transport trailer. Andrew Holtz, a doctoral student with training in ergonomics and biomechanics, is working on the design of a machine for commercial use that will reduce ergonomic risk of harvesting by vineyard workers. Holtz's final design will take into consideration the scale of production, fabrication capabilities and the acceptance issues involved with introducing such a machine to the market.

The task of hand-harvesting winegrapes poses ergonomic risks in the form of musculoskeletal disorders (MSDs).

Particle Effects on an Allergic Model of Asthma

Jeff Sherman

Airborne particles generated by agricultural activities, consisting primarily of carbon and ammonium nitrate, may constitute a significant health risk to workers with compromising respiratory conditions, such as asthma. Studies suggest that exposure to ambient particulate matter (PM) poses significant health risks to compromised individuals, but the mechanism and severity of these effects are unknown.

Jeff Sherman seeks to better define inflammatory changes in the Brown Norway (BN) rat as a model of allergic airways disease and the potential mechanisms by which airborne particles may influence these airway responses. The development of airway inflammation and hyperactivity in BN rats sensitized to ovalbumin closely mimics the pathophysiology of human asthma. Therefore, the effects of PM exposure in this animal model may provide essential data to better elucidate specific factors relating PM exposure to exacerbation of asthmatic symptoms in humans.

(*see* **Funding** *on page 6*)

(**Funding** *continued from page 5*)

Development and Evaluation of Foliar Dust Exposure Assessment

Jodi L. Smith

Building on data from previous agricultural dust exposure studies and her own current study in winegrape vineyards, graduate student Jodi Smith has found that operations with excessive leaf contact tend to cause higher exposures for inhalable and respirable dust. This suggests that foliar dust is a potential source of dust exposure in agricultural workers of many commodities. Foliar dust may be composed of soil dust, pesticide residue and settled ambient dust, which may pose potential health risks.

Smith plans to develop a simple method to assess foliar dust and determine the association between the composition of foliar dust and soil dust. She will consider and evaluate three methods for extracting foliar dust:

1. a leaf washing technique using whole leaves,
2. a leaf washing technique using leaf punches, and
3. a leaf vacuuming technique.

Developing a method for foliar dust collection and measurement could result in the formation of a proxy indicator of exposure. Currently, no reliable technique exists for collecting foliar dust.

Graduate student researchers will report on the progress of their projects during one of the Center's upcoming noon seminars during the 2003-2004 academic year.

CALENDAR

June 6, 12:10–1p.m.,
TB 137, UC Davis Campus
Farmworker Partnerships
Martha Guzman, MS, Legislative Specialist, United Farmworkers of America, AFL-CIO

September 5, 12:10–1p.m.,
TB 137, UC Davis Campus
First noon seminar series event of the 2003–2004 school year.
For information, call Kathy Ponce at (530) 752-4050.

September 7–9
Crowne Plaza Union Square
San Francisco, CA
Challenges in Agricultural Health & Safety
For information, please visit http://agcenter.ucdavis.edu, or call Kathy Ponce at (530) 752-4050.

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